

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

Applicant(s): Suranjan Panigrahi et al. Docket No.: 43062.0200
Serial No.: Group Art Unit:
Filed: July 31, 2003 Examiner:
Title: ON-THE-GO SUGAR SENSOR FOR DETERMINING SUGAR
CONTENT DURING HARVESTING

INFORMATION DISCLOSURE STATEMENT

Commissioner For Patents
Washington, D.C. 20231

Commissioner:

In accordance with the duty of disclosure under 37 C.F.R. §1.56 and pursuant to 37 C.F.R., §§1.97 and 1.98, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents listed on the attached Form PTO/SB/08A. One copy of each cited document was submitted previously with the parent application, U.S. Serial No. 09/758,392. Applicant respectfully submits that all pending claims are patentable over the foregoing references, alone or in combination. The Examiner is requested to initial the enclosed Form PTO/SB/08A and return a copy thereof to the undersigned.

The items listed on Form PTO/SB/08A may be deemed to be pertinent to the above-identified application and are made of record to assist the Patent and Trademark Office in its examination of this application. The Examiner is respectfully requested to fully consider the items and to independently ascertain their teaching.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicants reserve the right to dispute any of the listed documents as prior art during examination. Further, Applicants do not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application. Furthermore, the submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other material information may exist.

1. ☐ For each of the following items listed on the enclosed copy of Form PTO/SB/08A that is not in the English language, an English language translation of that item or a portion thereof or a concise explanation of the relevance of that item is enclosed:
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2. ☒ Any copy of the items listed on the enclosed copy of Form PTO/SB/08A that is not enclosed with this Information Disclosure Statement was previously cited by or submitted to the Patent and Trademark Office in the prior ☒ Parent Application, ☐ Continuation, ☐ Divisional or ☐ Continuation-In-Part application under 37 C.F.R. §1.97, U.S. Serial No. 09/758,392, filed January 12, 2001.
3. ☒ No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with:
- ☒ 37 C.F.R. §1.97(b)(1), within three months of the filing date of the above-identified application.
 - ☐ 37 C.F.R. §1.97(b)(2), within three months of the date of entry into the national stage as set forth in §1.491 in an international application.
 - ☐ 37 C.F.R. §1.97(b)(3), before the mailing date of a first Office action on the merits.
4. ☐ No fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 3 above but before the mailing date of a final action or a Notice of Allowance (where there has been no prior final action), and is accompanied by one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 8 below.
5. ☐ A fee is due under 37 C.F.R. §1.17(p) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(c), after the period specified in paragraph 3 above but before the mailing date of a final action or a notice of allowance (where there has been no prior final action):
- ☐ A check in the amount of \$180.00 is enclosed in payment of the fee.
 - ☐ Charge the fee to Deposit Account No. 19-2814. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
6. ☐ A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with 37 C.F.R. §1.97(d), after the mailing date of a final action or a notice of allowance, whichever comes first, but before payment of the issue fee, and is accompanied by:

- a. one of the certifications pursuant to 37 C.F.R. §1.97(e) set forth in paragraph 8 below; and
 - b. the attached petition requesting consideration of this Information Disclosure Statement; and
 - c. the fee due under 37 C.F.R. §1.17(i)(1) which is paid as set forth in paragraph 9 below.
7. ☐ A fee is due under 37 C.F.R. §1.17(i)(1) for this Information Disclosure Statement since it is being filed in compliance with:
- a. ☐ 37 C.F.R. §1.313(b)(3), after the issue fee has been paid and information cited in this Information Disclosure Statement may render at least one claim unpatentable and is accompanied by the attached Petition To Withdraw Application From Issue;
 - b. ☐ 37 C.F.R. §1.313(b)(5), after the issue fee has been paid and information cited in this Information Disclosure Statement is to be considered in a Continuation application upon abandonment of the instant application and is accompanied by the attached Petition To Withdraw Application From Issue.
 - c. ☐ The fee due under 37 C.F.R. §1.17(i)(1) is paid as set forth in paragraph 9 below.
8. ☐ I hereby certify that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.
- ☐ I hereby certify that no item of information in the Information Disclosure Statement filed herewith was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

9. ☐ A check in the amount of \$180.00 is enclosed in payment of the fee due under 37 C.F.R. §1.17(p).
- ☐ Charge the fee due under 37 C.F.R. §1.17(i)(1) to Deposit Account No. 19-2814. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
- ☐ The Commissioner is hereby authorized to charge any additional fees which may be required for this Information Disclosure Statement, or credit any overpayment to Deposit Account No. 19-2814. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

Snell & Wilmer

Dated: 7/31/03


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Form PTO-1449 U.S. Department of Commerce Patent & Trademark Office				Atty. Docket No. 43062.0217		Serial No.	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)							
				Applicant Suranjan PANIGRAHI et al.			
				Filing Date July 31, 2003		Group Unknown	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-Class	Filing Date (if appropriate)
	AA	5,751,421	05/12/98	Wright et al.	356	328	
	AB	5,991,025	11/23/99	Wright et al.	356	328	
	AC	5,898,792	04/27/99	Oste et al.	382	110	
	AD	4,540,282	09/10/85	Landa et al.	356	328	
	AE	3,597,616	08/03/71	Brunton et al.	250	83.3	
	AF	4,040,747	08/09/77	Webster	356	188	
	AG	4,253,766	03/03/81	Funk	356	418	
	AH	4,260,262	04/07/81	Webster	356	418	
	AI	4,463,261	07/31/84	Bowman	250	339	
	AJ	4,560,275	12/24/85	Goetz	356	326	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AK	Randy Nouis, Predicting the Ninety-Fifth Percentile Dust Environment for Passenger Vehicles in the Continental United States, March 1-5, 1993, pp. 1-11					
	AL	C. S. Chang et al., Grain Flow Regulator for Dust Emission Control, November - December, 1985, pp. 2059-2062					
	AM	Joseph A. Borgia et al., Pressure Drop and Flow Characteristics for a Heavy-Duty Air Filter During Dust Loading, November 16-19, 1987, pp. 1-15					
	AN	Charles O. Reinhart et al., Measurement of Engine Air Cleaner Efficiency Using Airborne Particle Size Analysis, September 12-15, 1983, pp. 1-8					
	AO	Philip C. Williams, et al.; Determination of Protein and Moisture in Wheat and Barley by Near-Infrared Transmission, 1985, pp. 239-244					
EXAMINER				DATE CONSIDERED			
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	AA	4,806,764	02/21/89	Satake	250	339	
	AB	4,925,305	05/15/90	Erickson	356	300	
	AC	4,997,280	03/05/91	Norris	356	308	
	AD	5,132,538	07/21/92	Norris	250	339	
	AE	5,239,180	08/24/93	Clarke	250	339	
	AF	5,241,178	08/31/93	Shields	250	339	
	AG	5,308,981	05/03/94	Perten	250	339.01	
	AH	5,406,084	04/11/95	Tobler et al.	250	339.01	
	AI	5,517,302	05/14/96	Stearns et al.	356	326	
	AJ	5,327,708	07/12/94	Gerrish	56	1	
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	AK	K. H. Norris et al., Optimization of Mathematical Treatments of Raw Near-Infrared Signal in the Measurement of Protein in Hard Red Spring Wheat. I. Influence of Particle Size, 1984, pp. 158-165					
	AL	Renfu Lu et al., Determination of Firmness and Sugar Content of Apples Using Near-Infrared Diffuse Reflectance, 24 pages					
	AM	F. De Lene Mirouze et al., Quantitative Analysis of Glucose Syrups by ATR/FT-IR Spectroscopy, 1993, pp 1187-1191					
	AN	Véronique Bellon-Maurel et al., Quantitative Analysis of Individual Sugars during Starch Hydrolysis by FT-IR/ATR Spectrometry. Part I: Multivariate Calibration Study – Repeatability and Reproducibility, 1995, pp 556-562					
	AO	Suranjan Panigrahi, et al., On-The-Go Sensing Techniques for Sugar Determination of Sugarbeet in the Field, pp176-178					
	AP	E. K. Kemsley et al., Quantitative analysis of sugar solutions using infrared spectroscopy, 1992, pp299-304					
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	AA	4,037,970	07/26/77	Webster et al.	356	188	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AB	Dr. Daniel S. Humburg et al., Spectral Analysis of Sugar Beet Canopy for Spatial and Temporal Quantification of Sugar Content, Quality, and Disease, 12/14/99, pp. 1-6					
	AC	Dave Berard, Protein Monitor on the Market, 07/97, pp. 18-19					
	AD	Carol R. Dumas, New Milestone Monitor Analyzes Grain Quality On The Go, 02/14/97, pp. 1-4					
	AE	Jerry Workman, Jr., A Compact Reference for Practitioners, pp. Contents and 423-435					
	AF	Food Processing Automation, 05/06/90, pp. Table of Contents and 103-114					
	AG	Donald A. Burns, Handbook of Near-Infrared Analysis, pp. Contents 53-106					
	AH	P. C. Williams et al., Effect of Mutual Interactions on the Estimation of Protein and Moisture in Wheat, 11/24/82					
	AI	Russell Tkachuk, Ph.D., Protein Analysis of Whole Wheat Kernels by Near Infrared Reflectance ^{1,2}					
	AJ	G. Downey et al., Protein Testing of Wheat by Near Infrared Reflectance					
	AK	Frédéric Cadet et al., Direct Spectroscopic Sucrose Determination of Raw Sugar Cane Juices, 1997, pp 166-171					
	AL	Gianluigi Marchetti, Application of a NIR on-line automatic analyzer system in a beet sugar factory, 1990, pp 210-215					
	AM	Nils Berding et al., Crop Ecology, Production & Management, 1991, pp1017-1023					
	AN	Nils Berding et al., Near Infrared Reflectance Spectroscopy for Analysis of Sugarcane from Clonal Evaluation Trials: II. Expressed Juice, 1991, pp 1024-1028					
	AO	Roberto Giangiacomo et al., Near Infrared Spectrophotometric Determination of Individual Sugars in Aqueous Mixtures, 1986, pp 679-683					
	AP						
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	AH	Stephen R. Delwiche et al., Classification of Hard Red Wheat by Near-Infrared Diffuse Reflectance Spectroscopy, 1993, pp. 29-35					
	AI	Huaipu Song et al., Neural Network Classification of Wheat Using Single Kernel Near-Infrared Transmittance Spectra, October 1995, pp. 2927-2934					
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	AK	Philip C. Williams, Application of Near Infrared Reflectance Spectroscopy to Analysis of Cereal Grains and Oilseeds, 1975, pp. 561-576					
	AL	Near-Infrared Reflectance Method for Protein Determination, pp. 1-2					
	AM	Near-Infrared Method for Protein Content in Whole-Grain Wheat, pp. 1-3					
	AN	Innovative Protein Monitoring, pp. 1-2					
	AO	File History - U.S. Patent No. 5,751,421					
	AP	J. Sorvaniemi et al., Using Partial Least Squares Regression and Multiplicative Scatter Correction of FT-NIR Data Evaluation of Wheat Flours, 1993, pp 251-258					
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	AG						
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	AH	Suming Chen et al., "Neural Network Analysis of Sugar Content in Fruit Juice", 07/18-21/99, pp. Title page thru 12					
	AI	Renfu Lu et al., "Determination of Sugar Content and Firmness of Apples Using Near-Infrared Diffuse Reflectance", 07/9-12, 00, pp. Title page thru 16					
	AJ	K. J. Kaffka et al., "Attempts to Determine Oil, Protein, Water and Fiber Content in Sunflower Seeds by the NIR Technique", 1983, pp117-129					
	AK	Essex E. Finney, Jr. et al., "Determination of Moisture in Corn Kernels by Near-Infrared Transmittance Measurements", 1978, pp 581-584					
	AL	Wang-Sheng Li et al., "Determination of Rough Rice Quality by a Portable Near-Infrared Spectroscopy", 1997, (5) pages					
	AM	D. T. Lamb et al., "Moisture Determination in Single Soybean Seeds by Near-Infrared Transmittance", 1991, pp 2123-2129					
	AN	P. C. Williams et al., "Influence of Temperature on Estimation of Protein and Moisture in Wheat by Near-Infrared Reflectance", 1982, pp473-477					
	AO	D. Wang et al., "Effect of Wheat Kernel Size and Orientation on Reflectance Spectra and Single Kernel Color Classification", 1997, pp 1-34					
	AP	S. R. Delwiche, "Measurement of Single-Kernel Wheat Hardness Using Near-Infrared Transmittance", 1993, pp1431-1437					
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	AA	5,578,931	11/26/96	Russell et al.	324	536	
	AB	5,218,529	06/08/93	Meyer et al.	702	028	
	AC	5,844,086	12/01/98	Murray	530	377	
	AD	6,005,076	12/21/99	Murray	530	377	
	AE	5,351,338	09/27/94	Wigren	704	219	
	AF	5,986,749	11/16/99	Wu et al.	356	073.1	
	AG	4,649,281	03/10/87	Schmitt et al.	250	574	
	AH	4,448,790	05/15/84	Sarkki et al.	426	052	
	AI	5,410,021	04/25/95	Kampen	530	372	
	AJ	5,472,511	12/05/95	Rayas et al.	127	067	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AK	M. R. Campbell et al., "Whole Grain Amylose Analysis in Maize Using Near-Infrared Transmittance Spectroscopy", 1997, pp300-303					
	AL	Stermer et al., "Infrared Reflectance Spectroscopy for Estimation of Moisture of Whole Grain", 1977, pp345-351					
	AM	F. E. Dowell et al., "Automated Single Wheat Kernel Quality Measurement Using Near-Infrared Reflectance", 1997, pp 1,3,5,7, and 9					
	AN	B. G. Osborne, "Recent Progress in the Application of NIR to the Measurement of Quality Parameters in Flour", 1982, pp577-581					
	AO	J. S. Shenk, "How NIR Can Help in Measuring Forage Quality for Breeding and Utilization Programs", (3) pages					
	AP	Gerard Downey, "Estimation of Moisture in Undried Wheat and Barley by Near Reflectance", 1985, pp951-958					
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	AA	4,836,017	06/06/89	Bozek	073	152.42	
	AB	5,755,672	05/26/98	Arai et al.	600	547	
	AC	3,886,331	05/27/75	Schierer	356	308	
	AD	5,317,524	05/31/94	Das et al.	702	134	
	AE	5,442,438	08/15/95	Batchelder et al.	356	301	
	AF	5,689,333	11/18/97	Batchelder et al.	356	301	
	AG	3,876,881	04/08/75	Bohlen	250	361.C	
	AH	5,130,158	07/14/92	Otsubo et al.	426	622	
	AI	5,173,079	12/22/92	Gerrish	460	007	
	AJ						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AK	Doninique Bertrand et al., "Application of Principal Component Analysis to the Prediction of Lucerne Forage Protein Content and <i>in vitro</i> Dry Matter Digestibility by NIR Spectroscopy", 1987, pp299-307					
	AL	Shuso Kawamura et al., "Determining Undried Rough Rice Constituent Content Using Near-Infrared Transmission Spectroscopy", 1997, pp cover, 1,3,5, and 7					
	AM	Holger M. Jaenisch et al., "Instrumentation to Measure the Near-IR Spectrum of Small Fruits", 1990, pp162-166					
	AN	Paul Geladi et al., "Partial Least-Squares Regression: A Tutorial", 1985, pp1-17					
	AO	Constantinos Goutis, "Second-Derivative Functional Regression with Applications to Near Infra-Red Spectroscopy", 1998, pp103-114					
	AP	Milling Feed and Fertiliser, "FMBRA takes the Grind out of Measuring Moisture", pp 34-35					
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	AA	5,224,203	06/29/93	Skeirik	395	22	
	AB	5,212,765	05/18/93	Skeirik	395	11	
	AC	5,619,618	04/08/97	Bigus	395	23	
	AD	5,617,511	04/01/97	Bigus	375	26	
	AE	5,697,373	12/16/97	Richards-Kortum et al.	128	664	
	AF	5,559,034	09/24/96	Roberts et al.	435	320.1	
	AG	5,605,577	02/25/97	Rayas et al.	127	67	
	AH	4,108,847	08/22/78	Creinin et al.	260	112 G	
	AI	6,001,412	12/14/99	Huber et al.	426	656	
	AJ	3,578,866	05/18/71	Kohler et al.	356	74	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AK	John S. Shenk et al., "Near Infrared Reflectance Analysis with Single-and Multiproduct Calibrations", 1993, pp582-584					
	AL	D. T. Williams et al., "The Derivative Spectrometer", 1970, pp 1597-1605					
	AM	F. E. Barton et al., "The Calibration of NIR Reflectance Spectrometer for the Determination of Diverse Compositional Parameters", 1988, pp 768-773					
	AN	R. J. Barnes et al.; "Standard Normal Variate Transformation and De-Trending of Near-Infrared Diffuse Reflectance Spectra", 1989, pp772-777					
	AO	Kurt C. Lawrence et al., "Sensing Wheat Moisture Content Independent of Density", 1997, pp Cover Page, 1,3,5,7,9,11,13 and 15					
	AP	Abraham Savitzky et al., "Smoothing and Differentiation of Data by Simplified Least Squares Procedures", 1964; pp1627-1639					
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	AA	4,146,332	03/27/79	Moore	356	308	
	AB	3,776,642	12/04/73	Anson et al.	356	188	
	AC	5,478,748	12/26/95	Akins et al.	436	86	
	AD	4,866,644	09/12/89	Shenk et al.	364	571.02	
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	AF	3,861,788	01/21/75	Webster	350	315	

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		Document	Date	Country	Class	Sub-class	Translation Yes No
	AG	WO 99/40419	08/12/99				
	AH	0 388 082	09/19/90	EP			

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AI	Principle Introduction to PROTRONICS, (8) pages
AJ	"Comments on the Savitzky-Golay Convolution Method for Least-Squares Fit Smoothing and Differentiation of Digital Data", 1978, pp1383-1386
AK	Gerald S. Birth et al., "Interaction Between Light and Natural Materials: Laboratory Demonstrations", (4) Cover Pages, and pp1-36
AL	Gerald S. Birth, "How Light Interacts with Foods", (6) pages
AM	H. Martens et al., "Partial Least Squares Regression: A New Two-Stage NIR Calibration Method", 1982, pp607-647
AN	Tormod Næs et al., "Comparison of Multivariate Calibration and Discriminant Analysis in Evaluating NIR Spectroscopy for Determination of Meat Tenderness", 1996, pp350-357

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	AA						
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AK	G. Asimopoulos et al., "On-Line Monitoring of Dairy Products with the Use of NIR Technology", pp 266-271					
	AL	"Comments on Smoothing and Differentiation of Data by Simplified Least Square Procedure", 1972, pp 1906-1910					
	AM	Edward K. Baldwin, Ph.D., "Calibrating Near Infrared Instruments for On-Line Food Processing Measurements", pp 252-265					
	AN	P. D. Wilson et al., "Polynomial Filters of any Degree", 1981, pp 599-603					
	AO	L. P. McDermott, "The Benefits and Pitfalls of Applying Near Infrared Analysis On-Line", pp 103-114					
	AP	B. G. Osborne, "Monitoring the accuracy of NIR Instruments", 1987, pp 515-521					
	AQ	James R. Long, "Spectroscopic Calibration and Quantitation Using Artificial Neural Networks", 1990, pp 1791-1797					
EXAMINER				DATE CONSIDERED			
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